

NOW—
A SOLID STATE
THREE DIGIT
DIGITAL
VOLT-OHM-METER
WITH
THE LUXURY OF
WAY-OUT
SPECIFICATIONS...
AT A BUDGET
PRICE: \$495



THE REPORTER
BY HARMAN-KARDON

harman kardon

SOLID STATE 3-DIGIT VOLT-OHM-METER



Harman-Kardon proudly introduces a major achievement in electronic measurement equipment for research, development, and quality control... **In the laboratory, on the production line, or in inspection centers...** designed to provide the high accuracy performance of much costlier solid state digital voltmeters, at tremendous savings, through the economies of quantity manufacturing. The provision of direct, three digit, readout of DC voltage or resistance, with automatic polarity switching, at this price, makes THE REPORTER the lowest priced quality digital instrument available today.

This new unit incorporates new and sophisticated design concepts to ensure day in—day out accuracy

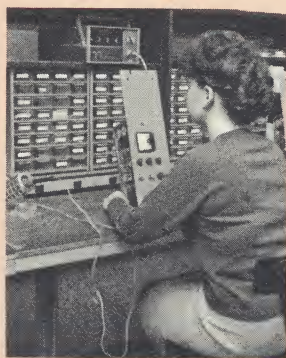
and stability, without sacrifice in size, reliability, cost, or convenience. A long service-free life is assured by rugged plug-in digital circuit cards... Completely solid state—no vacuum tubes, stepping switches, photocells, or reed relays to deteriorate or wear out... Its compact size—only 8½" x 5" x 16⅝"—invites use at the bench, or in field measurements. Smaller and more rugged than many other instruments offering much less performance and versatility, THE REPORTER is ready for years of continuous service under the most rigorous conditions of operation. We invite you to ask our sales representative for a free demonstration in your own plant. Models are available to satisfy your specific requirements.

FEATURES

THE REPORTER by Harman-Kardon provides instantaneous, automatic polarity reading of positive and negative voltages — no polarity switch — four ranges (the Reporter 34), with direct readout of voltages from .001 volts to 999 volts, and resistance from one ohm to 999K ohms. **RANGES**—Manually selected voltage ranges are: ± 1 volt (the Reporter 34), ± 10 volts, ± 100 volts, and ± 1000 volts. Resistance ranges are: 1000K ohms, 100K ohms, 10K ohms, 1K ohm. **DECIMAL POINT**—Automatic illuminated decimal point indicators track with range switching. **OFF-SCALE INDICATORS**—An automatic off-scale indicator illuminates if nominal full scale voltage is exceeded. A special control switch, on the rear of the unit, allows the choice of either continuation of readings up to 10% beyond full scale — or — automatic blanking when full scale is exceeded. **HIGH SPEED MEASUREMENT**—A complete voltage measurement is performed within 50 milliseconds, maximum. **VARIABLE SAMPLING RATE**—Sample rates may be manually adjusted from five samples per second to one sample/three seconds, or the "hold" feature may be utilized. **HIGH INPUT IMPEDANCE**—High input impedance guarantees minimum circuit loading for utmost precision. **CONVENIENT PACKAGING**—The small size (only 8½" of bench space) and rugged case, with combination carrying handle and elevator, ensure reliability under the most stringent conditions of operation. **DISPLAY BLANKING**—Automatic display blanking is provided, during measurement, to avoid "running numbers," and operator eyestrain — **HIGH OVERVOLTAGE PROTECTION.**

PERFORMANCE

THE REPORTER by Harman-Kardon utilizes the high reliability digital circuit techniques developed by our Data Systems Division for military computer and data processing applications. Worst Case circuit design, used throughout, has been tailored to a new simplified measurement concept, to minimize sources of error and drift. **VOLTAGE ACCURACY**— $\pm 0.1\%$ of full scale, ± 1 count. **RESISTANCE ACCURACY**— $\pm 0.5\%$ of full scale, ± 1 count. **OPERATING TEMPERATURE**—Full accuracy and reliability are maintained over the temperature range from $+32^{\circ}\text{F}$ to $+104^{\circ}\text{F}$.



DETAILED SPECIFICATIONS

THE REPORTER 33

THE REPORTER 33 is the basic, three range instrument:

Manually Selected Ranges

D.C. Voltage
 ± 10 , ± 100 , ± 1000
 Minimum Increment
 .01 volts
 Resistance
 1K, 10K, 100K, 1000K ohms
 Minimum Increment
 1 ohm

Input Impedance		Protection
10 volt range	1 megohm	150V
100 volt range	1 megohm	500V
1000 volt range	10 megohms	1200V

Accuracy

Voltage: $\pm 0.1\%$ of full scale, ± 1 count
 Resistance: $\pm 0.5\%$ of full scale, ± 1 count

Resistance Measuring Current

1K ohm scale 10.0 milliamps
 10K ohm scale 1.0 milliamps
 100K ohm scale 0.1 milliamps
 1000K ohm scale 0.01 milliamps
 Voltage Protection 25V

Display

High brightness, in-line, $\frac{3}{4}$ ", gas discharge, numerical indicators — may be read under high ambient light, with wide angle view.

Display Time

Variable (front panel control) from 0.2 to 3 seconds, with hold position. Readout blanked during balancing.

Decimal Point

Automatically tracks with range switch.

Polarity Indication

Automatically controlled by input voltage.

Off-Scale Indication

Automatically indicates, when voltage exceeds full scale. Measurements may be utilized 10% beyond full scale.

Temperature Range

0°C to +40°C (+32°F to +104°F)

Construction

Completely solid state, plug-in digital circuit cards.

Power Requirements

115V/230V (internal jumper), 50 to 400 cps, 20 watts.

Input Connector

Convenient front panel connector for input signal (see connection chart). Accessory probe, P-31, available.

Accessory Connector

Accessory Output Connector, J-101 provides convenient output signals for use with the AC Converter unit and other input accessories.

Weight

20 pounds

Dimensions

5" h. x $8\frac{1}{2}$ " w. x $16\frac{3}{4}$ " d.

Price

\$495

THE REPORTER 34

THE REPORTER 34 incorporates all of the basic features of THE REPORTER 33, with the addition of a fourth, sensitive, voltage measurement range.

Manually Selected Ranges

D.C. Voltage
 ± 1 , ± 10 , ± 100 , ± 1000
 Minimum Increment
 .001 volts
 Resistance
 1K, 10K, 100K, 1000K ohms
 Minimum Increment
 1 ohm

Input Impedance		Protection
1 volt range	1 megohm	100V
10 volt range	1 megohm	150V
100 volt range	10 megohms	500V
1000 volt range	10 megohms	1200V

All other specifications are identical to THE REPORTER 33.

Resistance Measuring Current

1K ohm scale 10.0 milliamps
 10K ohm scale 1.0 milliamps
 100K ohm scale 0.1 milliamps
 1000K ohm scale 0.01 milliamps
 Voltage Protection 25V

Display

High brightness, in-line, $\frac{3}{4}$ ", gas discharge, numerical indicators — may be read under high ambient light, with wide angle view.

Display Time

Variable (front panel control) from 0.2 to 3 seconds, with hold position. Readout blanked during balancing.

Decimal Point

Automatically tracks with range switch.

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Accessory Connector

Accessory Output Connector, J-101 provides convenient output signals for use with the AC Converter unit and other input accessories.

Weight

20 pounds

Dimensions

5" h. x $8\frac{1}{2}$ " w. x $16\frac{3}{4}$ " d.

Price

\$595

CONNECTION CHART

Input Connector — All Models — J1
 Amphenol 91-PC4F (mates with 91-MC4M)

Pin No.

1. Ground
2. Signal
3. Sample Trigger Input**

Accessory Connector — All Models — J-101
 Amphenol 57-40140 (mates with 57-30140)

Pin No.

1. Sample trigger input**
2. Ground (signal)
3. Decimal control (1)
4. Decimal control (10)
5. Decimal control (100)
6. Decimal control (1000)
7. Readout command output*
8. Switched AC
9. Switched AC
10. Plus indicator blanking input
11. Minus indicator blanking input
12. Ground (power)
13. Signal input (accessory)
14. Signal input

*LOGIC OUTPUTS:

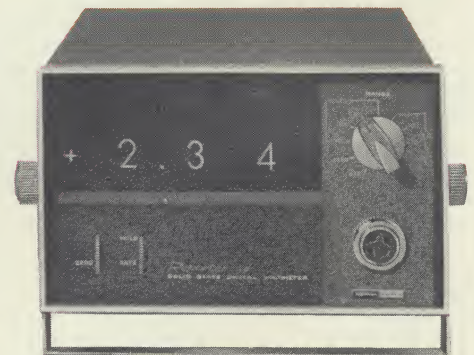
"1" = Nominal Ground (—0.5 volts max.)

"0" = —6 to —12 volts DC

Drive Capacity: 1 ma max.

**TRIGGER INPUTS:

6 volt Negative Step,
 0.5 microsecond rise time,
 1 ma. load.



ACCESSORIES AVAILABLE

P-31 Input Probe — Price: \$15.00

R-30 Rack Mount, Single Unit —

Price: \$50.00

AC-32 AC Converter — Price: On Request

As part of the process of continuing product improvement we reserve the right to make changes in specifications or performance, at any time. Prices are subject to change without notice.

SYSTEMS APPLICATIONS

THE REPORTER 35 High Speed BCD A/D Converter

THE REPORTER 36 High Speed Binary A/D Converter

Request Catalog 7013

Data Systems Division

harman kardon

Incorporated ■ Plainview, Long Island

A subsidiary of THE JERROLD CORPORATION

NOW—
A SOLID STATE
ANALOG-TO-DIGITAL
CONVERTER BCD-Binary
WITH
THE LUXURY OF
WAY-OUT
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AT A BUDGET
PRICE:\$795



THE REPORTER
BY HARMAN-KARDON

SOLID STATE ANALOG TO DIGITAL CONVERTERS

THE REPORTER 35

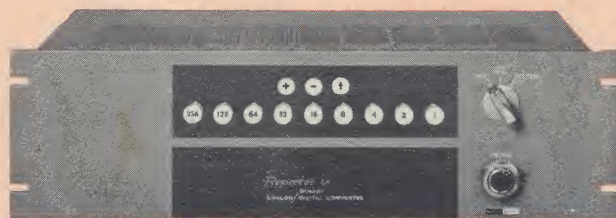
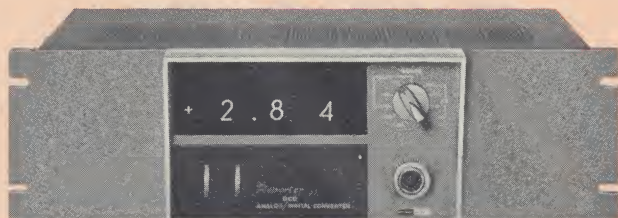
High Speed BCD Converter

\$795

THE REPORTER 36

High Speed Binary Converter

\$795



VOLTAGE AND RESISTANCE MEASUREMENT: 3-DIGIT ACCURACY / AUTOMATIC POLARITY SWITCHING AND INDICATION / HIGH SPEED MEASUREMENT: INTERNAL OR EXTERNAL CONTROL / AUTOMATIC OFFSCALE INDICATION AND PROTECTION / HIGH INPUT IMPEDANCE / PLUG IN CARD CONSTRUCTION / RACK MOUNTING

VOLTAGE MEASUREMENT: 9-BIT PRECISION / AUTOMATIC POLARITY SWITCHING AND INDICATION / HIGH SPEED MEASUREMENT: INTERNAL OR EXTERNAL CONTROL / AUTOMATIC OFFSCALE INDICATION AND PROTECTION / EXTREMELY HIGH INPUT IMPEDANCE / PLUG IN CARD CONSTRUCTION / RACK MOUNTING

RANGE	Manual Ranging $\pm 1V$, $\pm 10V$, $\pm 100V$, $\pm 1000V$ $1K\Omega$, $10K\Omega$, $100K\Omega$, $1000K\Omega$
POLARITY	Automatic Switching and Display
DISPLAY	Three Digit, High Brightness, $\frac{3}{4}$ " Indicator Tubes + Sign, - Sign, Offscale, $K(\Omega)$, Automatic Decimal Point
ACCURACY	Voltage $\pm 0.1\%$ ± 1 ct; Resistance $\pm 0.5\%$ ± 1 ct
OVER RANGE	Accurate to 110%; Automatic over range indication Switch choice: overscale reading or auto blanking
IMPEDANCE	10 megohms at DC
OVERVOLTAGE	25V(Ω); 100V(1V); 150V(10V); 500V(100V); 1200V(1000V)
SAMPLE TIME	2.5 ms. max.
SAMPLE RATE	Front Panel variable $\frac{1}{2}$ — 5 cps and Hold External Trigger to 150 cps (250 cps for positive input) Note: Resistance Sampling Rate limited by 0.1 uf input
MEAS CURRENT	10ma($1K\Omega$); 1ma($10K\Omega$); 0.1ma($100K\Omega$); 0.01ma($1000K\Omega$)
STABILITY	± 1 ct/4 hrs; ± 1 ct/10°C; 15 minute warmup
TEMP RANGE	0°C to +40°C (full accy); -10°C to +55°C ($\pm 0.2\%$ ± 1 ct)
POWER INPUT	115V/230V, 50-400 cps, 25 watts
MOUNTING	Enclosed Rack Mount, 19" x 5 $\frac{1}{4}$ " x 14 $\frac{1}{4}$ ", 29 lbs. All cards plug in, mounting for 6 accessory cards

CONNECTION CHART

Input Connector J1 (front panel)	Output Connector J-102
Amphenol 91-PC4F	Amphenol 57-40240
Mates with 91-MC4M	Mates with 57-30240
1. Signal Ground	1. BCD Output 1
2. Signal Input	2. BCD Output 2
3. Sample Trigger Input**	3. BCD Output 4
4. Readout Command	4. BCD Output 8
	5. BCD Output 10
	6. BCD Output 20
	7. BCD Output 40
	8. BCD Output 80
	9. BCD Output 100
	10. BCD Output 200
	11. BCD Output 400
	12. BCD Output 800
	13. Switched AC
	14. Switched AC
	15. Internal Trigger **
	16. Offscale Output
	17. + Sign Output
	18. Readout Command
	19. Ground
	20. Ground
	21. +28V DC, 20 ma
	22. -12V DC reg., 50 ma
	23. Sample Trigger Input**
	24. Spare

ACCESSORIES

P-31	Input Probe	\$15.00
S-03993	Sample and Hold Input (10 microsecond Sampling Interval)	\$375.00
S-08971	Remote Readout Display	\$300.00

RANGE	$\pm 10V$ (adjustable 9.5V-10.5V)
PRECISION	9 Bit, Min. Incr. 10/512 volts
POLARITY	Automatic Switching and Display
DISPLAY	9 Bit, Neon Indicator Tubes, + Sign, - Sign, Offscale
ACCURACY	± 1.5 ct (9 bit output); ± 0.5 ct (8 bit output)
OFFSCALE	Automatic Indication
IMPEDANCE	Greater than 100 megohms at DC High frequency: $10K\Omega$ in series with 0.1 uf
OVERVOLTAGE	50V protection
SAMPLE TIME	2.5 ms. max.
SAMPLE RATE	Internal: 100 cps; External Trigger: 150 cps max. (250 cps max. for positive inputs)
ZERO OFFSET	Rear Panel Adjustable: $\pm 1V$
TRIGGER	Front Panel Selector: Internal/External
TEMP RANGE	0°C to +40°C (full accuracy); -10°C to +55°C (± 1 ct at 8 bit precision)
POWER INPUT	115V/230V, 50 to 400 cps, 25 watts
MOUNTING	Enclosed Rack Mount, 19" x 5 $\frac{1}{4}$ " x 14 $\frac{1}{4}$ ", 28 lbs. All cards plug in, mounting for 7 accessory cards

CONNECTION CHART

Input Connector J1 (front panel)	Output Connector J-102
Amphenol 91-PC4F	Amphenol 57-40240
Mates with 91-MC4M	Mates with 57-30240
1. Signal Ground	1. Binary Output 1
2. Signal Input	2. Binary Output 2
3. Sample Trigger Input **	3. Binary Output 4
4. Readout Command	4. Binary Output 8
	5. Binary Output 16
	6. Binary Output 32
	7. Binary Output 64
	8. Binary Output 128
	9. Binary Output 256
	10. + Sign Output
	11. Offscale Output
	12. Sample Trigger Input
	13. Binary Output 1
	14. Binary Output 2
	15. Binary Output 4
	16. Binary Output 8
	17. Binary Output 16
	18. Binary Output 32
	19. Binary Output 64
	20. Binary Output 128
	21. Binary Output 256
	22. Readout Command
	23. Internal Trigger **
	24. Ground

ACCESSORIES

P-31	Input Probe	\$15.00
S-03994	Sample and Hold Input (10 microsecond Sampling Interval)	\$375.00
S-04180	NPN Output, 10 bit precision	\$695.00

LOGIC OUTPUTS:
"1" = Nominal Ground (-0.5 volts max.)
"0" = -6 to -12 volts DC
Drive Capacity: 1 ma max.

****TRIGGERS**
6 volt Negative Step,
0.5 microsecond rise time,
1 ma. load.

Data Systems Division

harman kardon

Incorporated ■ Plainview, Long Island
516 OV 1-4000
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